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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,375	12/29/2000	Futoshi Tanigawa	10059-365US (P23917-01)	1498

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EXAMINER

CANTELMO, GREGG

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 09/19/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/752,375

Applicant(s)

TANIGAWA ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,5,6,8,9,11,12,14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7,10 and 13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-15 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I, claims 1, 4, 7, 10, and 13 drawn to a nickel-metal hydride storage battery wherein the composition meets the relations (1), (2), (3) and (4).

Species II, claims 2, 5, 8, 11, and 14 drawn to a nickel-metal hydride storage battery wherein the composition meets the relations (1), (2'), (3) and (4').

Species III, claims 3, 6, 9, 12, and 15 drawn to a nickel-metal hydride storage battery wherein the composition meets the relations (1), (2''), (3) and (4).

The relations of each species are not identical and the instant application discloses each of these species as separate embodiments. Thus each species appears to be drawn to different nickel-metal hydride storage battery compositional relationships.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

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Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. A telephone call was made to William W. Schwarze on September 11, 2002 to request an oral election to the above restriction requirement, but did not result in an election being made.

3. During a telephone conversation with William W. Schwarze on September 12, 2002, a provisional election was made without traverse to prosecute the invention of Group I, claims 1, 4, 7, 10 and 13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 2, 3, 5, 6, 8, 9, 11, 12, 14 and 15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

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or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

5. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

6. The information disclosure statement filed December 29, 2000 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

7. The drawings received December 29, 2000 are acceptable for examination purposes.

Specification

8. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly

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those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

In reviewing the instant abstract and that of related application 09/146,121 it appears that the abstracts have been reversed. In particular the instant invention is drawn to the relationship stated in the abstract of 09/146,121. Further the abstract in the instant invention appears drawn to the cobalt having a particular oxidation number.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1, 4, 7, 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The term "paste type" in claim 1 is a relative term which renders the claim indefinite. The term "paste type" is not defined by the claim, the specification

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does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear how the electrode is a paste type and further what kinds of electrodes were considered to be paste type electrodes, at the time of conception of the instant invention. Furthermore, the term paste type may be applied to a process of forming the electrode but may result in an electrode which is not a paste after processing, for example of drying the paste on a grid or support.

b. The equation of claim 1 is not clearly defined. For example the first active material comprises X parts by weight and the second active material comprises Y parts by weight. But it is unclear what total weights the parts are determined. Is it only the weights of the active material X and Y or other materials present in the electrode as well? In addition, it is unclear in which way parts by weight are incorporated into the equations 1-4. For example to arrive at the relationship of equation 4, the parts by weight would appear to have to be expressed as fractions as opposed percentages since the use of percentages would not arrive at the equation.

c. The discharge capacity limitation of claim 13 is unclear. For example the limitation of a supposed nominal capacity rate of 1C is unclear since the supposed aspect renders the limitations following this statement to be unclear as to how such a limitation may or may not be pertinent to the discharge relationship of claim 13. Further the comparison of the potential relative to a mercury

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electrode is unclear since the conditions of the mercury electrode relative to the potential are not clear.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11 219 701 A (JP '701) in view of WO98/34290 (WO '290).

JP '701 discloses a positive electrode for an alkaline storage battery containing a first active material and a second active material: the first active material comprises X parts by weight of nickel hydroxide (X being 90-60 weight percent of the first and second active materials) with $aX/100$ parts by weight of cobalt oxyhydroxide ($aX/100$ being 1-10 weight percent of cobalt oxyhydroxide), and the second active material comprising Y parts by weight of particular nickel oxyhydroxide (Y being 10-40 weight percent of the first and second active materials) and $bX/100$ parts by weight of cobalt oxyhydroxide ($bX/100$ being 1-10 weight percent of cobalt hydroxide), the nickel in the second active material has an inherent oxidation number α (claim 1).

One of the nickel hydroxide and nickel oxyhydroxide contains at least one element of cobalt, zinc, cadmium, magnesium, calcium, manganese and aluminum (translated prior art claim 6 as applied to claim 4).

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The difference between the instant claims and prior art of JP '701 is that JP '701 does not explicitly disclose the oxidation number of the second active material to be from 2.5 to less than 3.0.

The instant application shows that the oxidation number of the nickel is affected by the quantity of the 12% by weight NaClO(aq) solution (Fig. 1 and page 18). And at a 1 L volume of this solution, as is used in the examples of JP '701, the nickel oxidation number is determined to be 3.02, just slightly above 3.0.

JP '701 discloses that it is known to use an alkali solution of 12% by weight NaClO to promote the oxidation to oxy-nickel hydroxide (paragraph [0019]). The use of NaClO in such oxidation promoting process is well documented.

The nickel oxyhydroxide including Mn as a solid-solution element can be obtained by oxidizing nickel hydroxide including Mn as a solid-solution element with an oxidizing agent. Examples of the oxidizing agent are sodiumhypochlorite, potassium permanganate and potassium persulfate. A desired γ ratio can be attained by increasing/decreasing the amount of the oxidizing agent to be added. When a larger amount of the oxidizing agent is added, a higher γ ratio is attained (disclosure and various examples of WO '290).

Thus one of ordinary skill in the art would have recognized that the oxidation number of nickel in the nickeloxyhydroxide component can be optimized to a desired level by adjusting the amount of oxidizing agent to be added.

It has been held that when the difference between a claimed invention and the prior art is the range or value of a particular variable, then a prima facie rejection is

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properly established when the difference in the range or value is minor. Titanium Metals Corp. of Am. v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985). Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesche, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by varying the concentration of the NaClO solution in manufacturing the second nickel active material since it would have adjusted the oxidation number of the second nickel active material. It has been held that when the difference between a claimed invention and the prior art is the range or value of a particular variable, then a prima facie rejection is properly established when the difference in the range or value is minor. Titanium Metals Corp. of Am. v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985). Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesche, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

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13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '701 in view of WO '290 as applied to claims 1 and 4 above, in further view of U.S. patent No. 6,083,642 (Kato).

The teachings of claims 1 and 4 have been discussed above and are incorporated herein.

The difference not yet discussed is of the oxidation number of the cobalt in the oxyhydroxide in the active materials in greater than 3.

Kato discloses a process wherein the nickel active material is coated with cobalt having an oxidation number greater than 3 (abstract).

The motivation for using a higher valence cobalt material is that it provides a positive electrode material having high active material utilization and improved overdischarge withstanding characteristics (col. 4, ll. 18-22).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a higher valence cobalt material since it would have provided a positive electrode material having high active material utilization and improved overdischarge withstanding characteristics.

14. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '701 in view of WO '290 as applied to claims 1 and 4 above, in further view of U.S. patent No. 4,837,119 (Ikoma).

The teachings of claims 1 and 4 have been discussed above and are incorporated herein.

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The ratio of negative electrode capacity to positive electrode capacity is 2 to 1 (paragraph [0032] as applied to claim 13).

The differences not yet discussed are of the battery further comprising a negative electrode comprising a hydrogen storage alloy, a separator, an aqueous alkaline electrolyte solution, a sealing plate having a safety valve and a battery case.

While JP '702 does not detail the overall components of the battery, one of ordinary skill in the art would have found such modifications to have been readily apparent.

Ikoma discloses a sealed storage battery comprising a positive electrode 11, negative electrode 10, separator 12b, aqueous electrolyte solution, and a sealing plate having a safety valve (Fig. 5 and col. 6, line 48 through col. 7, line 8).

For JP '701 to measure the performance of the cells having the positive electrodes therein, the presence of an opposing negative electrode is required as well as an electrolytic solution to enable charge transfer in the battery.

Ikoma teaches of the use of a positive electrode, negative electrode and aqueous alkaline electrolyte solution in the aforementioned columns and lines.

Thus the motivation for providing a negative electrode and electrolyte solution is to effectively enable charge transfer from the positive electrode to a second electrode across the electrolytic medium.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a negative electrode and electrolyte solution since it would have effectively enabled

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change transfer from the positive electrode to a second electrode across the electrolytic medium.

In manufacturing a cell, the use of the separator is an obvious addition as shown by Ikoma to effectively separate the positive and negative electrodes in the aforementioned Fig. 5 and columns 6 and 7.

The motivation for using a separator as shown by Ikoma is to electrically isolate the positive and negative electrode materials.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by using a separator as shown by Ikoma since it would have electrically isolated the positive and negative electrode materials.

The use of a sealing plate seals the battery components from the external atmosphere in the aforementioned Fig. 5 and columns 6 and 7.

The motivation for providing a sealing plate to the open end of a battery is to seal the battery components within the battery and isolate them from the external environment.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a sealing plate to the open end of a battery since it would have sealed the battery components within the battery and isolated them from the external environment.

While providing a safety valve in the sealing plate which releases the gas generated in the battery out of the battery when inner pressure rises above a given value, in order that the battery is not damaged and does not explode in case of the abnormal increment of the inner pressure in the aforementioned Fig. 5 and columns 6 and 7 and also in col. 3, ll. 8-25.

The motivation for providing a safety valve in the sealing plate is to compensate for internal pressure fluxes so that the battery is not damaged and does not explode in case of the abnormal increment of the inner pressure.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a safety valve in the sealing plate since it would have compensated for internal pressure fluxes so that the battery would not be damaged and would not explode in case of the abnormal increment of the inner pressure.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPAT 5,348,822 discloses forming various nickel active material compositions using NaClO solutions. USPAT 3,899,350 discloses a method for preparing nickel electrode powder wherein a combination of Ni(II) hydroxide and Ni(III) hydroxide is present. USPAT 5,789,113 discloses active material for nickel electrode further comprising cobalt. USPAT 6,203,945 discloses nickel hydroxide

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material for use in an alkaline storage cell having an average oxidation number of 2.15 to 2.40.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

gc

September 12, 2002


Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700